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Serial No. 09/667,408

Multifunction Data Port

Reply to Office Action of 1/23/2008

CLAIMS

Claims: 1 - 29 are cancelled, Claims 30, 31, 32, 33, 36, 37, 39, 40, 41, 42, and 59 are amended and Claims 60, 61, 62, 63 and 64 are new

I claim:

30, (Currently amended) A multifunction data port apparatus with a computer and multiple interfaces connected between a digital services network, including the Internet and an intranet, and a utility user's household, said data port comprising:

- a) a utility meter interface with analog to digital converters configured to measure Voltage, harmonics and current in real time and to communicate said digitized Voltage and current data and with a meter for measuring utility usage measured by a utility meter in said household of a utility delivered to said household with said computer in said data port and
- b) a network interface configured to communicate ~~at broadband rates~~ with said digital service network and
- c) a household interface, said interface attached to said utility user's electric power lines, and configured to communicate with household devices of said utility user and with the said utility user;
- d) a said computer disposed within said data port configured to store and process said digitized data and to calculate from said data parameters from the group of: power usage, power factor, harmonics, Voltage transits, electrical noise, current balance, and communicate said processed data to and from said interfaces, and
- e) able to measure and store the difference in said calculated power usage with said power usage measured by said utility meter and to communicate said measurements to said electric utility, and to said utility user.

Serial No. 09/667,408 Multifunction Data Port Reply to Office Action of 1/23/2008

31. (Currently amended) A multifunction data port apparatus as recited in claim 30 comprising the means wherein

a) said network interface is adapted to function to process said digital data exchanged at broadband rates with over the said internet and said digital communication networks and

b) said computer is programmed to function to process said data at broad band rates and to function as an internet router.

32. (Currently amended) A multifunction data port apparatus as cited in claim 30,

wherein said computer in said claim and said interfaces in said claim further comprises

a) a router connected to said computer that is adapted to communicate with a multiplicity of said digital service networks and with said interfaces located within said utility user's household and

b) said computer and said router are further configured to store and process, transmit and receive said communications of said data.

33. (Currently amended) A multifunction data port apparatus as cited in claim 30,

further comprising a scrambler device to scramble and descramble said digitized data in said communications and said data transmitted between said digital service providers in digital services network and said utility user's household.

34. (Withdrawn previously submitted) A multifunction data port apparatus as cited in

claim 30, comprising a video processor configured to process, store and retrieve, and transmit and receive video data and signals, including modulating and demodulating said video signals

Serial No. 09/667,408 Multifunction Data Port Reply to Office Action of 1/23/2008

and said data port further configured to convert analog video signals into digital video signals and digital video signals into analog video signals.

35. (Withdrawn previously submitted) A multifunction data port apparatus as cited in claim 30, comprising a voice processor configured to process, store and retrieve, and transmit and receive voice data and telephone communication; said voice processor providing means for transmitting and receiving voice, fax and data information from within said utility user's household and means for transmitting and receiving voice, fax and data information from external service providers and means for using transmission media selected from the group consisting of cellular and wireless transmission, telephone lines, power lines, fiber optic lines and coaxial video cable; and means for transmitting and receiving voice, fax and data information using voice over Internet protocol.

36. (Currently amended) A multifunction data port apparatus as cited in claim 30, wherein said connection to said digital services network and to said digital service providers in said Internet or an intranet is by means of at least one transmission media selected from the group consisting of fiber optic cable, coaxial cable, twisted pair cable, electric power lines, telephone lines and wireless transmission media.

37. (Currently amended) A multifunction data port apparatus as cited in claim 30, wherein said computer further comprises a data storage device powered by the electric utility configured to store information and communication received from said interfaces and a battery to provide backup power in cases of power outage.

Serial No. 09/667,408

Multifunction Data Port

Reply to Office Action of 1/23/2008

38. (Withdrawn previously submitted) A multifunction data port apparatus as cited in claim 30, wherein said computer is programmed to detect a power outage and to retrieve stored digitized voice messages in said digital services network from said data storage device and to communicate said retrieved message to said utility user when said computer detects a power outage.

39) (Previously submitted) A multifunction data port apparatus as cited in claim 30, further comprising global positioning or other means to identify the location of said multifunction data port and wherein said computer is programmed to detect a power outage and to communicate with said utility company the geophysical location of said power outage through said digital services network

40. (Currently amended) A method to use said data port and said thermostat adjustments in said utility user's household to shed peak power loads of said utility comprising the following steps:

a) said electric utility installs said data port and offers reduced power rates to said utility users ~~customers~~ which and whom installs a programmable thermostat connected through said utility users house wiring or by wireless means to said data port, and allows said utility company to change thermostat adjustments, utilizing said data port connection, at times of peak power demand and

b) said utility user installs ~~installing said data port~~ said thermostat which is can be adjusted both remotely and manually, by said utility user and by said utility, in said households of said utility

Serial No. 09/667,408 Multifunction Data Port Reply to Office Action of 1/23/2008

user, who and which said utility user chooses to authorize said utility to adjust their said thermostats, and

c) said utility modifies said thermostat ~~adjustments~~ in times of peak power demand by amounts agreed by said utility ~~user customer~~ and said data port transmits to said utility and said utility user customer receives ~~said power usage data from said data port~~ and

d) said utility ~~compares said power usage before and after said thermostat adjustments while permitting~~ permits said utility user customers to reset their said thermostats at any time and

e) said utility uses said difference in said power usage after said thermostat adjustment to measure effectiveness of said method and

f) said utility is able to communicate via said data port to said utility user benefits to said utility user selected from the group consisting of environmental, safety and financial benefits of said method to shed peak power loads as a result of said utility user and said utility using said thermostat adjustments.

41. (Previously submitted) A multifunction data port apparatus as cited in claim 30, further comprising a sealed housing with attendant electronics being configured to detect any tampering of the seal for said sealed housing and means to detect any physical intrusion within said data port apparatus and means to program said computer comprised in said data port to transmit said evidence of said tampering to said utility provider.

42. (Currently amended) A method to use a multifunction data port apparatus, comprising an embedded computer in said apparatus with multiple interfaces connected between a digital

Serial No. 09/667,408 Multifunction Data Port Reply to Office Action of 1/23/2008

services network, including the Internet, and a utility user's household for power management in said household comprising the steps of:

- a) installing said data port at a utility user's premises connected to said utility user's electric powerlines, and to said utility user's Internet connection ;
- b) using said data port and said embedded computer to continuously measure Voltage and current data on said electric lines in real time:
- c) and using said data port and said embedded computer for calculating and storing said Voltage and current data measurements on harmonics, Transients, and peak in said data port computer, and
- d) said data port computer is used to average calculate the said power measurements and compare said calculated power measurements with said power measurements from said utility user's utility meter, and
- e) ~~installing programmable thermostats connected to said data port in said utility user's household on said electric lines, and transmitting to said utility said power measurement data regarding said power usage and said harmonics; and~~
- e) means within said data port and said embedded computer to notify said utility if the differences between said calculated power use and power measured by said utility meter exceed limits set by said utility and said utility user.
- g) ~~a utility meter interface configured with in said data port to communicate with a meter for measuring the utility usage in said household of a utility delivered to said household and~~
- h) ~~a network interface configured within said data port to communicate with digital service providers and~~

Serial No. 09/667,408 Multifunction Data Port Reply to Office Action of 1/23/2008

~~i) a household interface configured within said data port to communicate with household devices of said utility user and~~

~~j) a computer disposed within said data port configured to store and process data and other communications from said interfaces and~~

~~k) said data port is located in a sealed housing with attendant means to detect any tampering of said sealed housing~~

43. (Withdrawn previously submitted) A multifunction data port apparatus as cited in claim 42 with attendant electronics configured to use a global positioning system to identify the physical location of said multifunction dataport.

44. (Withdrawn previously submitted) A multifunction data port apparatus as cited in claim 42, wherein said computer further comprises a data storage device configured to retrieve, transmit, receive and store information and communication received from said interfaces and a battery to provide backup power in cases of power outage

45. (Withdrawn currently amended) A method of conducting transactions optimized by a secure computing environment enabled by means of said multifunction data port apparatus as recited in claims 30 and 42, wherein said computer is further configured to receive an authorization for an Internet financial transaction from said an Internet accessible vendor capable of using a credit and debit card number on said credit and said debit cards for the said utility user's and said number possessed by said utility user in said household together with the name of ~~an Internet~~ said vendor; and wherein said data port is further configured for

Serial No. 09/667,408

Multifunction Data Port

Reply to Office Action of 1/23/2008

- a) encrypting a data port identity number and unique Internet protocol address;
- b). encrypting said card number of said utility user, prior to transmission of said encrypted card number to said vendor ~~or creditor~~, with an encryption key known by the financial institution which issued said credit or said debit card to said utility user;
- c). transmitting said encrypted card number and the amount of the purchase by said utility user for said financial authorization to a said financial institution which issued said credit or said debit card;
- d). receiving from said financial institution verification that a purchase amount reported by said vendor is matched to the amount transmitted by said data port from said utility user; ~~by thence~~
- e). ~~having~~ said financial institution authorizing payment to said vendor only when the two said purchase amounts agree and said key decrypts the said number from said vendor into a valid number, known only to the said financial institution verifying said transaction, for processing the transaction by said vendor and
- f) wherein said vendor never has possession of a valid credit or debit card number and whereby said encryption key is changed for each transaction.

46. (Withdrawn previously submitted) A multifunction data port apparatus of claim 43 further configured to insure that said dataport is physically located for use by said utility provider and said vendor in said utility user's household by means of the physical location provided by either a global positioning system via satellite, or via ground-based radio frequency triangularization methods, or both.

Serial No. 09/667,408 Multifunction Data Port Reply to Office Action of 1/23/2008

47. (Currently amended) A method of conducting a secure purchase or other secure transaction by means of using the multifunction dataport of claim 45 configured as a secure terminal accessing the Internet or other digital service network and further configured to

a) provide that the authorized party sending said message to said secure data port asking requesting it to transmit to said authorized party the current timing signals from said global positioning system and

b) to provide that said authorized party is using said timing signals to verify the location of said secure dataport, and

c) said timing signals and location providing said authorized party with a unique key to decrypt said message.

48. (Currently amended) A method for conducting secure computing and transmission of data using the multifunction dataport in a sealed location of claim 45 by further means of

a) utility user transmitting and receiving data within said utility user's household from said sealed multifunction dataport and

b) said secure dataport transmitting said secure message over a digital services network only if said seal is intact and it if said data port does not detect evidence of tampering.

49. (Currently amended) A method for using the multifunction data port apparatus of claims 30 and 42, comprising the steps of

Serial No. 09/667,408

Multifunction Data Port

Reply to Office Action of 1/23/2008

- a) electric utility installing said utility meter with ~~said switch~~ said data port and said programmable thermostat to control peak demand power in utility user's meter box and
- b) said utility sending commands to said multifunction data port to transmit through said meter interface to said utility meter the signal to switch on and off the said electric power or any circuit within said utility user's household to which the utility user has by prior agreement consented.

50. (Withdrawn previously submitted) The method to communicate secure financial and other transactions including voting and census registration by the use of said secure dataport and the means of the steps stated in claim 45.

51. (Withdrawn previously submitted) The method of using the broadband multifunction dataport of claim 34 to receive from digital service networks video communication, games and multimedia for use by said utility user in said household.

52. (Currently amended) The method of using the said multifunction dataport of claims 1, 30 and 35 to receive and transmit utility data including power use, peak demand pricing, power factor and Voltage harmonics as well as telecommunication data including voice over Internet protocol, cellular and local telephone services, video, and video on demand by said utility user.

53. (Withdrawn previously submitted) The multifunction dataport apparatus of claim 42 wherein said sealed housing provides the seal and means for attachment for the connection of the electric meter to the meter box.

Serial No. 09/667,408

Multifunction Data Port

Reply to Office Action of 1/23/2008

54. (Withdrawn previously submitted) The multifunction dataport apparatus of claim 42 where said sealed housing of said data port is physically attached to the electric meter box

55. (Withdrawn previously submitted) The method to use the multifunction dataport apparatus of claim 30 as a secure terminal by locating it on power poles in the vicinity of the power distribution lines and the said utility user's household.

56. (Currently amended) A method to further configure and use the multifunction dataport apparatus of claim 45 as a secure terminal whereby

a) said data port is further configured to have a serial number and Internet address known to and registered with financial and other secure institutions and said vendors at the request of said utility user and

b) said serial number and Internet address is itself encrypted and is ~~encrypted~~ configured by said computer in said data port to generate the said unique key to encrypt and decrypt data transmissions by said data port over the Internet.

57) (Currently amended) A method to use the multifunction dataport of claims 4, 30 and 32 to sub-meter electric power and provide computer services and access to the internet and other digital services networks by the means of

- a) said dataport being used as a master data port to the sub-metered dataports attached to the utility meter and housing of each of the said sub-metered data ports and
- b) providing electrical and other utility services to each utility user in residential and

Serial No. 09/667,408 Multifunction Data Port Reply to Office Action of 1/23/2008

commercial structures wherein said utility services include cellular and other telecommunication services, Internet access, cable TV, video games and other access to said digital services networks through said sub-metered data ports.

58) (Currently amended) A method according to claim 43 wherein the said multifunction data port and said sub-metered data ports are connected and configured to ~~employed~~ to receive transmissions from cameras connected to said data port that monitor the movements of users restricted to their said households homes or other quarters by legal action or other circumstances including medical disabilities.

59. (Currently amended) A multifunction data port with multiple interfaces connected between a digital services network, including the Internet, and a utility user's household, and connected on said utility user's electric powerlines, said data port comprising:

- a) a utility meter interface for measuring, recording, reporting, and messaging bi-directionally in said digital services network, peak demand, power factor, Voltage, harmonics and utility usage in said household, of an electric utility delivered to said household, and
- b) said utility meter interface located in a housing for said data port and electrically coupled to said electric meter and connected to the said utility user and the said utility by means selected from the group consisting of fiber optic, coaxial cable, telephone cable, broadband over powerline, and wireless interfaces comprised within said data port housing;

Serial No. 09/667,408

Multifunction Data Port

Reply to Office Action of 1/23/2008

- c) a computer disposed within said data port housing and connected to said utility meter, said computer in said data port housing providing a household interface connected by means selected from the group consisting of fiber optic, coaxial cable, telephone cable, broadband over power line, and wireless interfaces, between said digital services network and household devices located internal to said utility user's household, and
- d) said computer processes and stores said utility usage data in real time, and is able to transmit said utility usage data over said digital services network for use in said household devices of said utility user, and to the said utility.

60. (New) A method to use said data port to reduce power demand in said utility user's household at times of peak power loads of said utility comprising the following steps:

- a) said electric utility installs said data port and offers reduced power rates to said utility users which and whom installs programmable switches, connected through said utility user's household wiring or by wireless means to said data port and
- b) said utility user installs a program specified by said utility in said computer in said data port to reduce peak power use in said utility user's household during times of peak power demand by
- c) turning off or regulating selected devices and appliances in said household, and thereby shifting power loads to times of reduced demand on said utility's power transmission system.

61. (new) A method to detect meter tampering and mal adjustment of utility user's power meter by the following steps:

Serial No. 09/667,408

Multifunction Data Port

Reply to Office Action of 1/23/2008

- a) said utility installs said data port which makes an independent measurement of power use by said utility user and
- b) compares said independent power measurement with power use from said utility power meter and
- c) transmits a signal to said utility if said difference exceeds an amount determined by said utility.

62. A method to reduce electrical noise on power grid by using said data port to measure said electrical noise generated by said utility user and charging said user a higher electric rate for generation of said electrical noise.

63. (New) A method to use a multi function data port with a detector installed at an electric utility user's premises that is able to respond to frequency signals above 1000Hertz to calculate electric power parameters selected from a group composed of power use, power factor, Voltage transits and harmonics and to transmit said electric power parameters to said utility and said utility user, said data port and said detector further comprising

- a) analog to digital converters configured to digitize the analog current and Voltage measurement of the current and Voltage delivered by said electric utility to said utility user's premises and
- b) said digitized Voltage and said current measurements are processed in a computer located in said utility user's premises that is programmed to calculate said power parameters and

Serial No. 09/667,408

Multifunction Data Port

Reply to Office Action of 1/23/2008

- c) to transmit said power parameters to said utility and said utility user via communication media selected from a group composed of electric power line, optical fiber, wireless, coax and telecommunication lines.

64) (New) A method to use a multifunction data port attached to a utility user's electric lines and attached to said user's electric meter, said data port configured with an embedded computer and a digital camera to record the visible and graphic data from a utility user's electric meter in real time, said meter installed by said utility at or near said utility user's premises and said multifunction data port further comprising

a) electronic interfaces configured to connect to said utility user's communications channels selected from the group consisting of said utility user's Internet service, said utility user's cell phone or wireless access service, said utility user's electric power lines configured with power line carrier technology, and said utility user's cable television or fiber optic service, and

b) said electronic interfaces further configured to transmit in real time said visible and graphic data from said digital camera from said utility user's electric meter to the utility user and to said utility over said communication channels, and to store said data in said embedded computer in said multifunction data port.



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